

**Claims:**

1. Silicon dioxide powder characterised in that it is a silicon dioxide powder produced by flame hydrolysis and displaying a hydroxyl group density of 2.5 to 4.7 OH/nm<sup>2</sup>.
2. Silicon dioxide powder according to claim 1, characterised in that the silicon dioxide powder is a doped silicon dioxide powder.
3. Silicon dioxide powder according to claims 1 or 2, characterised in that the silicon dioxide powder is a silicon-metal mixed oxide powder, the content of silicon dioxide in which is at least 60%.
4. Silicon dioxide powder according to claims 1 to 3, characterised in that the hydroxyl group density in the silicon dioxide powder is between 3 and 4 OH/nm<sup>2</sup>.
5. Silicon dioxide powder according to claims 1 to 4, characterised in that the BET surface area of the silicon dioxide powder is between 5 and 600 m<sup>2</sup>/g.
6. Process for producing the silicon dioxide powder according to claims 1 to 5, characterised in that a silicon dioxide powder produced by a flame hydrolysis process and having a hydroxyl group density of less than 2.5 OH/nm<sup>2</sup> is treated at temperatures of 40 to 700°C under acid conditions and for reaction times of 5 minutes to 20 hours and is subsequently separated from the reaction mixture.
7. Process for producing the silicon dioxide powder according to claim 6, characterised in that inorganic or organic acids are used for the treatment.
- 30 8. Aqueous dispersion containing silicon dioxide powder according to claims 1 to 5.

9. Aqueous dispersion according to claim 8, characterised in that over a period of 6 months it does not thicken further and forms no sediment.
10. Aqueous dispersion according to claims 8 or 9,  
5 characterised in that its content of silicon dioxide powder is between 10 and 70 wt.%.
11. Aqueous dispersion according to claims 8 to 10,  
characterised in that its pH is between 3 and 12.
12. Aqueous dispersion according to claims 8 to 11,  
10 characterised in that the average aggregate diameter in the dispersion is less than 200 nm.
13. Aqueous dispersion according to claims 8 to 12,  
characterised in that it contains oxidising agents, corrosion inhibitors and/or surface-active substances.
14. Process for producing the dispersion according to  
claims 8 to 13, characterised in that a silicon dioxide powder having a hydroxyl group density of 2.5 to 4.7 OH/nm<sup>2</sup>, obtained from a silicon dioxide powder produced by flame hydrolysis, is incorporated into an aqueous  
20 solution by means of a dispersing device.
15. Use of the aqueous dispersion according to claims 8 to 13 for the production of transparent coatings, for  
chemical mechanical polishing, for glass production,  
sol-gel glass articles, for example overcladdings,  
25 crucibles, accessories, coatings, sintered materials,  
inkjet papers.